

25. The method according to Claim 24, wherein the bacterium has a 16S rRNA gene comprising the nucleotide sequence of any one of SEQ ID Nos: 2, 3, 4 or 5.--

SUPPORT FOR THE AMENDMENTS

Claims 17 and 22 have been amended to depend from Claim 16 and 21, respectively, and to clarify property (d) in each claim. No new matter is believed to have been added to this application by these amendments.

REMARKS

Claims 16-25 remain pending in this application. Favorable reconsideration is respectfully requested.

The rejection of Claims 16-19 and 21-24 under 35 U.S.C. §112, first paragraph, on the grounds that the specification does not demonstrate possession of the claimed invention is respectfully traversed.

The Office has taken the position that the specification identifies five microbial strains but the claims include any bacteria belonging to a particular new family or genus designated by the applicant, including those that have not yet been naturally isolated. However, there are no reasonable reasons that those skilled in the art would consider that a family or genus consists of only one or few strains, and, therefore, those skilled in the art would expect that there would exist microorganisms which belong to the same family or genus as described in the instant specification and have the ability to produce xylitol or D-xylulose from glucose, not just from the five strains recited in the specification.

Further, the claimed invention relates not to a microorganism itself, but rather relates to the use of a microorganism that has the ability to produce xylitol or D-xylulose from glucose to provide a method for producing xylitol or D-xylulose from glucose. If the claims of the present application are limited to the strains that the inventors isolated, a third party who obtained other strains can produce freely xylitol or D-sylulose from glucose by utilizing them and using the concept of the present invention. In this case, there will be no substantial differences at all between the patented process and a process practiced by the third party. If so, the present invention would have been unduly narrowed. In contrast, if it is considered that the applicant possessed the invention claimed in the instant claims at the time of filing, it is not said that the third party has unjustified disadvantages. Moreover, the possibility that unisolated strains may be included in the claims could not be a basis of denying fulfillment of written requirement.

The Office has also taken the position that there is no common core structure or elements which are shared between the strains, apart from the functional limitation of producing xylitol or D-xylulose from glucose.

However, in the molecular taxonomy limitation based on the sequence comparisons of 16S rRNA in Claims 16 and 21, and the microbiological characteristics in Claims 17 and 22 are not functional limitations but rather structural limitations. We enclose a copy of an excerpt from Bergey's Manual of Systematic Bacteriology (second edition) which is a standard for taxonomy of microorganisms. It is described therein that the 16 S rRNA-based procaryotic systematics is used as a backbone for the structuring the second edition of the Manual (please see page 49, left column, last paragraph, and page 61, left column, last two

complete paragraphs). This indicates that molecular taxonomy is a proper means for specifying microorganisms.

The Office has also taken the position that there is no apparent relationship between the possession of SEQ ID NO:1 or SEQ ID Nos: 2, 3, 4 or 5 by a bacteria with the recited characteristic or phenotype.

However, as described above, the molecular taxonomy based on the sequence of 16S rRNA has been established. Since a homology of 16S rRNA indicates a relation of microorganisms, it is easily assumed that the microorganisms showing homology in 16S rRNA share similar phenotype. Therefore, it is considered that there is, in fact, correlation between the molecular taxonomy based on the sequence of 16S rRNA and phenotype.

Based on the foregoing, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 16-19 and 21-24 under 35 U.S.C. §112, first paragraph, on the grounds that the specification is non-enabling is respectfully traversed.

The Office has taken the position that the specification fails to provide sufficient guidance for one skilled in the art to isolate a representative number of species of strains or genus of related species having the desired properties or characteristics to be utilized in the methods as claimed, and further, fails to provide sufficient teachings regarding to a reproducible screening process capable of identifying large numbers of bacterial strains having the desired characteristics.

However, the present invention relates not to a microorganism itself, but relates to use of a microorganism which has the ability to produce xylitol or D-xylulose from glucose to provide a method for producing xylitol or D-xylulose from glucose. The fact is, one skilled

in the art can produce xylitol or D-xylulose from glucose because the stains that can be used for the method of the present invention are disclosed in the specification.

Based on the foregoing, withdrawal of this ground of rejection is respectfully requested.

The rejection of Claims 16-17 and 21-22 under 35 U.S.C. §112, second paragraph, is believed to be obviated in part and is respectfully traversed in part.

The recitation “weak ability” in Claims 17 and 22 has been replaced with --an ability--.

The recitation “molecular taxonomic analysis” is not indefinite.

The specification describes and exemplifies methods of molecular taxonomic analysis. See pages 15-16 of the specification and Example 3 at page 28. Applicants submit that the concept and methodology of molecular taxonomic analysis would be clear to one skilled in the art, and that such analysis clearly defines the metes and bounds of the claimed subject matter.

Based on the foregoing, the claims are definite within the meaning of 35 U.S.C. §112, second paragraph. Accordingly, withdrawal of this ground of rejection is respectfully requested.

The obviousness-type double patenting rejection of Claims 1-25 of the present application over Claim 6 of U.S. Patent No. 6,335,177 will be obviated at the appropriate time by submission of a Terminal Disclaimer.

Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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IN THE CLAIMS

Please amend the claims as follows.

17. (Amended) The [A] method according to Claim 16 [for producing xylitol or D-xylulose, which comprises:

culturing a bacterium having an ability to produce xylitol or D-xylulose from glucose in a suitable medium to accumulate xylitol or D-xylulose in the medium, and

collecting xylitol or D-xylulose from the medium,]

wherein the bacterium has the following characteristics:

(a) an ability to produce xylitol or D-xylulose from glucose;

(b) quinone type: ubiquinone-10;

(c) GC content of DNA: about 56 to 57%;

(d) an [a weak] ability to produce acetic acid from ethanol; and

(e) grows in the presence of 30% glucose.

18. A method for producing xylitol or D-xylulose, which comprises:

culturing a bacterium belonging to the genus *Asaia* which has an ability to produce xylitol or D-xylulose from glucose in a suitable medium to accumulate xylitol or D-xylulose in the medium, and

collecting xylitol or D-xylulose from the medium.

22. (Amended) The [A] method according to Claim 21 [for producing xylitol or D-xylulose, which comprises:

culturing a bacterium having an ability to produce xylitol or D-xylulose from glucose in a suitable medium to accumulate xylitol or D-xylulose in the medium, and
collecting xylitol or D-xylulose from the medium,]

wherein the bacterium [an isolated microbial strain belonging to the family *Acetobacteraceae*, which] has the following characteristics:

- (a) an ability to produce xylitol or D-xylulose from glucose;
- (b) quinone type: ubiquinone-10;
- (c) GC content of DNA: about 52 to 53%;
- (d) an [a] weak ability to produce acetic acid from ethanol; and
- (e) grows in the presence of 30% glucose.